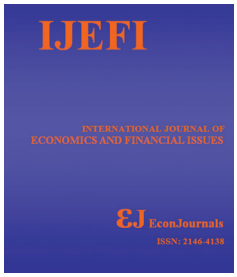

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The Impact of COVID-19 on Banking Sector Returns, Profitability, and Liquidity in South Africa

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ABSTRACT

The COVID-19 pandemic, which initially started as a health crisis, has had widespread economic impacts on various industries in the global economy. The banking sector, in particular, was significantly impacted by fiscal and monetary responses which were implemented to reduce the closure of several businesses and stabilize markets. Given that banks are regarded as systemically important financial institutions, this heightened uncertainty increased the possibility of a financial crisis because instabilities in the banking sector could have further detrimental effects on national and global economies. Therefore, the objective of this study was to explore the effect of the COVID-19 pandemic on the South African banking sector. To achieve this objective, the study analysed the returns, profitability, and liquidity of banks listed on the Johannesburg Stock Exchange using a panel regression approach. Together, the results of the study revealed that the profitability and liquidity of banks were negatively impacted by the COVID-19 pandemic, however, the excess bank stock returns generated by investors were not affected. These findings may serve as reference to policymakers when developing policies which regulate the banking sector in order to improve performance and ensure liquidity during periods of increased market uncertainty.

Keywords: Banking Sector, COVID-19, Liquidity, Profitability, Return
JEL Classifications: G01, G10, G11.

1. INTRODUCTION

In 2019, China reported its first case of Coronavirus (or COVID-19) which later spread to the rest of the world. Although the COVID-19 virus initially started as a health issue, it soon became an economic challenge impacting global economies. In particular, governments across the globe implemented quarantine policies and restricted cross-border travel, in order to control the spread of the virus (Nicola et al., 2020). However, these policies adversely impacted consumption, thus leading to a reduction in the cash flows to companies and a subsequent decline in stock returns (Mazur et al., 2020). As a result, the COVID-19 pandemic exacerbated the level of uncertainty in capital markets, consequently creating a sense of pessimism amongst investors (Ma et al., 2022). Due to the unprecedented nature of the pandemic, governments in partnership with central banks adopted various fiscal and monetary policy interventions in order to ensure financial stability and economic recovery (Demirgüç-Kunt et al., 2021). Banks, therefore, are expected to be a part of the economic solution as the main providers of capital for governments, individuals, and businesses.

During periods of increased market uncertainty, there are two alternatives to banks' performance; resilience or reduction. On one hand, banks may be resilient and withstand shocks caused by the COVID-19 pandemic due to precautionary measures which are taken to prepare for challenging and diverse future circumstances (Elnahass et al., 2021). On the contrary, banks may experience a significant reduction in performance as a result of reductions in interest rates, reductions in loan and investment returns, surges in non-performance loans, and liquidity dry-ups (Barua and Barua, 2021). Ghosh and Saima (2021) also mention that the pandemic negatively impacts banks' liquidity due to increased withdrawals

by depositors, reduced deposits from customers, and delays in revenue collection due to the closure of many businesses. To ease the strain on clients, the South African Reserve Bank reduced the repo rate by 275 basis points between January 2020 and May 2020 (Shikwane et al., 2020) whilst major South African banks offered payment holidays to customers with good standing (De Villiers et al., 2020). Together, these measures reduced and delayed the interest income for South African banks, subsequently, impacting the performance of these banks. On the contrary, the liquidity of South African banks was protected through monetary policy intervention and prudential regulations that aimed to maintain sufficient flow of funds to banks (Shikwane et al., 2020). Thus, it becomes important to explore the effects of the COVID-19 pandemic on the South African banking sector with particular reference to returns, performance, and liquidity.

This study contributes to existing literature in two important ways. Firstly, this study provides insight into the effect of the COVID-19 pandemic on African markets, particularly, South Africa, as African markets have received minimal attention in existing literature since Africa was the continent least affected by COVID-19 (Del Lo et al., 2022). Secondly, this study sheds light on the effect of COVID-19 on banks in emerging economies. This is particularly important because banks accelerate the growth of emerging economies, and instabilities in the banking system could result in adverse economic effects in these emerging countries (Barua and Barua, 2021). As such, the findings of this study can inform governments and policymakers on the development of regulations aimed at enhancing the resilience of the banking system during periods of increase market uncertainty.

This paper is outlined as follows: Section 2 reviews existing literature on the effect of COVID-19 on the banking system. Section 3 outlines the data and methodology used for the study. Section 4 presents and discusses the results. Section 5 concludes the study.

2. LITERATURE REVIEW

2.1. Effect of COVID-19 on Banks' Returns

Demir and Danisman (2021) found that the returns of larger banks with greater capitalisation and deposits, greater diversification, and less non-performing loans are more resilient during the COVID-19 pandemic. Demirgüç-Kunt et al. (2021) reported that prudential measures, induced to maintain stability in the banking sector, resulted in negative abnormal returns in bank stocks across the globe. Likewise, Albaity et al. (2022) reported that COVID-19 cases and deaths had negative impacts on bank stock returns in MENA countries. Remarkably, Mirzaei et al. (2022) reported that Islamic bank stocks performed approximately 10-13% better than conventional banks. This leads to the formulation of the following hypothesis:

H_1: The COVID-19 pandemic had a negative effect on the abnormal returns of banks.

2.2. Effect of COVID-19 on Banks' Profitability

Sutrisno et al. (2020) studied Islamic banks in Indonesia, and reported that the effect of COVID-19 differs based on the measure of performance. In particular, the return on assets, non-performing financing, capital adequacy ratio, and operating expenses to operating income ratio were not significantly impacted when employed as measures of performance, whilst the net operating margin and return of equity were significantly influenced by COVID-19. Elnahass et al. (2021) found that the COVID-19 pandemic had adverse effects on the performance of banks around the world, regardless of the performance measure used. These results were consistent across countries and bank-level characteristics. Katusiime (2021) documented that COVID-19 had a negative effect on banks in Uganda only in the long-run. Gazi et al. (2022) reported that the profitability of commercial banks in Bangladesh decreased during the COVID-19 period as a result of higher non-performing loan rates, greater hedging capital, holding more liquid assets, and inappropriate bank sizes. However, banks' profitability was positively impacted by low leverage positions and higher inflation rates during this period. This leads to the formulation of the following hypothesis:

H_2: The COVID-19 pandemic had a negative effect on the profitability of the South African banking sector.

2.3. Effect of COVID-19 on Banks' Liquidity

Li et al. (2020) found that commercial banks in the United States were able to withstand the increased liquidity demands brought about by the COVID-19 pandemic due to strong capital reserves and fund inflows from depositors and the Federal Reserve's liquidity injection programs. Rahman et al. (2021) found that COVID-19 (as measured by the trend in confirmed cases and death) adverse influenced banks' liquidity positions in Bangladesh. In addition, the authors reported that government policies, such as social distancing, negatively impacted the liquidity of banks. Magwedere and Marozva (2022) also found that the liquidity of South African banks deteriorated during the COVID-19 pandemic. This leads to the formulation of the following hypothesis:

H_3: The COVID-19 pandemic had a negative effect on the liquidity of South African banks.

3. DATA AND METHODOLOGY

3.1. Data

To assess the impact of COVID-19 on the South African banking sector, this study evaluates banks listed on the Johannesburg Stock Exchange (JSE). These include six banks: Absa Group Limited, Capitec Bank Holdings Limited, FirstRand Limited, Investec Limited, Nedbank Group Limited, and Standard Bank Group Limited. The Finbond Group Limited as well as unlisted banks in South Africa are not considered due to the unavailability of data. Nevertheless, the listed banks comprise of more than 85% of all banking assets in the South Africa banking sector (Du Toit and Cuba, 2018). The sample period covers years 2010-2022. The data for the respective banks are obtained from the BankFocus database.

3.2. Methodology

This study adopts a panel data approach to test the hypotheses outlined in Section 2. The advantage of the panel data approach is that it controls for heterogeneity which arises due to various in the size, nature, and complexity of the banks (Munangi and Bongani, 2020). Prior to the estimation of the panel models, the

stationary of the dataset is examine using the Levin et al. (2002) test for stationarity. Further, to ensure that the correct estimators are employed to run the panel regressions, the Hausman (1978) test is used to select between cross-sectional random and fixed effects.

The effect of COVID-19 on banking sector returns is examined using the following static panel regressions:

$$Return_{i,t} = \alpha_0 + \beta_1 COVID-19_t + \beta_2 Ln(Liquidity_{i,t}) + \beta_3 Size_{i,t} + \beta_4 Ln(Capital_{i,t}) + \varepsilon_{i,t} \quad (1)$$

Where $Return_{i,t}$ represents the abnormal return of bank i at time t which is calculated as the difference between the realized return and the return implied by the Capital Asset Pricing Model (CAPM). $COVID\text{-}19_t$ is a dummy variable which captures the duration of the COVID-19 pandemic, and takes a value of 1 during the pandemic (that is, during years 2020-2022) and 0 otherwise. To control for alternative explanation of banking sector returns, $Liquidity_{i,t}$ which captures the bank's liquidity, $Size_{i,t}$ which captures the bank's size, and $Capital_{i,t}$ which captures the bank's capital are included as control variables. *Ln* denotes the natural logarithm which is used to induce stationarity in the variables. α_0 is a constant term while $\varepsilon_{i,t}$ is an error term whilst coefficients β_1 to β_4 capture the effect of the explanatory variables. Equation (1) above is adapted from the study of Demirgüç-Kunt et al. (2021).

The effect of COVID-19 on the profitability of banks is examined using the following regressions:

$$Ln(ROA_{i,t}) = \alpha_0 + \beta_1 COVID-19_t + \beta_2 Ln(Liquidity_{i,t}) + \beta_3 Size_{i,t} + \beta_4 Ln(Capital_{i,t}) + \varepsilon_{i,t} \quad (2)$$

$$Ln(ROE_{i,t}) = \alpha_0 + \beta_1 COVID-19_t + \beta_2 Ln(Liquidity_{i,t}) + \beta_3 Size_{i,t} + \beta_4 Ln(Capital_{i,t}) + \varepsilon_{i,t} \quad (3)$$

where $ROA_{i,t}$ represents bank i's return on assets and $ROE_{i,t}$ represents bank i's return on equity. In Equations (2) and (3), $Liquidity_{i,t}$, $Size_{i,t}$, $Captital_{i,t}$, are included to control for other explanations of banks' profitability. Equations (2) and (3) are adapted from Gazi et al. (2022).

The following regression is used to assess the effect of COVID-19 on the liquidity of banks:

$$Ln(Liquidity_{i,t}) = \alpha_0 + \beta_1 COVID-19_t + \beta_2 Ln(ROA_{i,t}) + \beta_3 Size_{i,t} + \beta_4 Ln(Capital_{i,t}) + \beta_5 Ln(NPL_{i,t}) + \varepsilon_{i,t} \quad (4)$$

Where $Liquidity_{i,t}$ captures bank i's liquidity measured by the loan to assets ratio. Whilst there are various measures of a bank's liquidity, Al-Harbi (2017) notes that the loan to assets ratio is the most commonly used in existing literature. Alternative explanations for bank's liquidity include $ROA_{i,t}$, $Size_{i,t}$, $Capital_{i,t}$, and $NPL_{i,t}$ where $NPL_{i,t}$ is the non-performing loans ratio which proxies a bank's credit risk. Equation (4) is adapted from Al-Harbi (2017) who explore the determinants of bank liquidity. Table 1 provides a summary of the computation of all the variables used in this study.

4. RESULTS AND ANALYSIS

4.1. Preliminary Analysis

4.1.1. Descriptive statistics

Table 2 presents a summary of the descriptive statistics for each variable. On average, the South African banking sector underperforms relative to the entire JSE as indicated by its average excess return which is negative (−1.22E-06%). The banks' average assets are valued at R1 billion whilst the average return on assets is 1.84% and the average return on equity is 15.89%. The respective minimum statistics indicate that the banks did not experience any losses during this period since they have not reported any negative return on assets or return on equity (Siueia et al., 2019). Further, the liquidity ratio suggests that, on average, 60.22% of the bank's assets constituted of loans. This high percentage is justified because one of the key functions of commercial banks is to provide loans to clients (Luvuno, 2018). For completion, the descriptive statistics also indicate that, on average, banks fund 10.73% of their assets with equity and 5.07% of their loans default.

4.1.2. Stationarity results

The results of the Levin et al. (2002) test for stationarity are presented in Table 3. Overall, the null hypothesis that the panel data has a unit root is rejected for all the variables. This indicates that all the variables are stationary and can, therefore, be used in the estimation of the panel regressions.

4.1.3. Correlation matrix

Table 4 provides the correlation coefficients computed between the main variables of the study. The *COVID*-19 dummy variable displays a negative correlation with the dependent variables of this study. This implies that COVID-19 lead to a decrease in excess bank stock returns, return on assets, return on equity, and the loan to asset ratio. On the contrary, return on assets, return on equity, and the loan to asset ratio are positively correlated with each other. As expected, there is a high correlation between return on assets

Table 1: Computation of variables

Variable	Computation
Independent variables	
$Return_{i,t}$	Difference between the realized return and the return implied by CAPM
$ROA_{i,t}$	Profit after tax divided by total assets
$ROE_{i,t}$	Profit after tax divided by total equity
$Liquidity_{i,t}$	Net loans divided by total assets
Variable of interest	
$COVID\text{-}19_t$	Dummy variable which takes the value of 1 during the pandemic (that is, during years 2020–2022) and 0 otherwise
Control variables	
$Size_{i,t}$	Natural logarithm of total assets
$Capital_{i,t}$	Total equity divided by total assets
$NPL_{i,t}$	Value of non-performing loans divided by total loan portfolio

The computations of the variables are adapted from Al-Harbi (2017) and Xiazi and Shabir (2022). CAPM: Capital asset pricing model

Table 2: Descriptive statistics

Statistic	Return	ROA	ROE	Liquidity	Total Assets	Capital	NPL
Mean	−1.22E-06	1.842	15.892	60.218	1,000,000,000	10.733	5.070
Median	1.076	1.271	14.620	64.582	936,000,000	9.004	3.933
Maximum	119.017	5.980	27.218	77.291	2,880,000,000	23.896	27.717
Minimum	−79.192	0.363	4.434	36.541	9,488,223	6.367	0.676
SD	27.893	1.369	4.798	11.663	697,000,000	4.805	4.551
Skewness	0.535	1.672	0.278	−0.295	0.558	1.732	3.029
Kurtosis	6.859	4.421	2.861	1.739	2.752	4.332	13.313
Observations	78	78	78	78	78	78	78

SD: Standard deviation

Table 3: Stationarity results

Variable	Levin, Lin, and Chu test statistic	P	Order of integration
$Return_{i,t}$	−2.6769	0.0037	I (0)
$LnROA_{i,t}$	−2.3210	0.0101	I (0)
$LnROE_{i,t}$	−2.4312	0.0075	I (0)
$LnLiquidity_{i,t}$	−1.8478	0.0323	I (0)
COVID-19_t	−1.9233	0.0272	I (0)
$LnSize_{i,t}$	−1.4084	0.0795	I (0)
$LnCapital_{i,t}$	−2.6718	0.0038	I (0)
$LnNPL_{i,t}$	−2.9630	0.0015	I (0)

Table 4: Correlation matrix

Variable	COVID-19_t	$Return_{i,t}$	$LnROA_{i,t}$	$LnROE_{i,t}$	$LnLiquidity_{i,t}$
COVID-19_t	1.0000				
$Return_{i,t}$	−0.1285	1.0000			
$LnROA_{i,t}$	−0.1728	0.1623	1.0000		
$LnROE_{i,t}$	−0.3543	0.2857	0.8584	1.0000	
$LnLiquidity_{i,t}$	−0.1394	0.0688	0.0074	0.0211	1.0000

and return on equity as these are alternative measures of a bank's profitability and varies with the banks' after-tax profits.

4.1.4. Hausman test results

The results of the Hausman (1978) tests which are used to select the best estimator for running the panel regressions are presented in Table 5. The test is conducted with cross-sectional effects to account for differences across banks. The null hypothesis that the random effects model is appropriate cannot be rejected when $Return_{i,t}$, $LnROA_{i,t}$, and $LnROE_{i,t}$ are the dependent variables whilst the null hypothesis is rejected when $LnLiquidity_{i,t}$ is the dependent variable. As a result, this study proceeds with the cross-sectional random effects estimator to examine the effect of COVID-19 on banking sector returns and profitability whilst the cross-sectional fixed effects estimator is used for liquidity.

4.2. Findings of the study

The results of the panel data regressions are presented in Table 6. In Table 6, Models (1) and (2) assess the effect of COVID-19 on bank stock abnormal returns whilst Models (3) to (6) assess bank profitability and Models (7) and (8) assess bank liquidity.

Models (1) and (2) show that $COVID\text{-}19_t$ had a negative effect on $Return_{i,t}$, however, this effect is not statistically significant. Therefore, the first key finding of this study is that the COVID-19 pandemic did not have a significant effect on banking sector excess returns. Additionally, Model (2) shows that banks' liquidity, size, and capital do not significantly influence its excess returns. These findings are consistent with the Efficient Market Hypothesis and the Random Walk Theory which asserts that stock market returns cannot be predicted (Ţiţan, 2015).

Table 5: Hausman test results

Dependent variable	Chi-square statistic	P	Model
$Return_{i,t}$	2.7112	0.6072	Random effects
$LnROA_{i,t}$	0.9437	0.9182	Random effects
$LnROE_{i,t}$	0.9437	0.9182	Random effects
$LnLiquidity_{i,t}$	50.0403	0.0000	Fixed effects

Models (3) and (4) show that $COVID\text{-}19_t$ had a negative effect on $LnROA_{i,t}$ whilst Models (5) and (6) show that $COVID\text{-}19_t$ also had a negative effect on $LnROE_{i,t}$. These effects are statistically significant at a 1% level of significance. Therefore, the second key finding of this study is that the COVID-19 pandemic had a negative effect on the profitability of banks as measured by the return on assets and the return on equity. In particular, Models (4) and (6) suggest that banks decreased profitability by 0.34% in comparison to the pre-crisis period. The negative effect of COVID-19 on bank profitability is consistent with the results of Elnahass et al. (2021), Katusiime (2021), and Gazi et al. (2022). The negative effect of COVID-19 on bank profitability may be due to a reduction in the banks' revenues in the form of interest income which resulted from lower bank lending since private sector investment and consumption decreased during the pandemic (Elnahass et al., 2021; Rahmi and Sumirat, 2021). Furthermore, there may have been cash management issues which resulted from delayed or no collections because of lockdowns or the closure of many businesses.

The results of Models (4) and (6) also show that $LnCapital_{i,t}$ exhibits a significant, positive effect on banks' profitability. This finding is consistent with the findings of Islam and Nishiyama (2016) and Coccorese and Girardone (2021). There are several explanations for the positive relationship, however, two theoretical explanations dominate literature. First, the Expected Bankruptcy Hypothesis suggests that banks that are more capitalized incur lower bankruptcy costs, therefore, an increase in capital should increase profitability by decreasing funding costs which result from lower bankruptcy costs (Saleh and Abu Afifa, 2020). Second, the Signaling Hypothesis suggests that an increase in capital signals that future prospects are positive, leading to increased profitability for firms with great capital (Le and Ngo, 2020; Coccorese and Girardone, 2021).

Table 6: Parameter estimates for the panel regressions

Model	Dependent variable							
	$Return_{i,t}$		$LnROA_{i,t}$		$LnROE_{i,t}$		$LnLiquidity_{i,t}$	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	1.950	63.569	−4.138*	−1.747	−1.825*	−1.747	1.864*	3.693*
$COVID\text{-}19_t$	−8.451	−5.040	−0.243*	−0.336*	−0.280*	−0.336*	0.117*	0.060***
$LnLiquidity_{i,t}$		9.588		−0.194		−0.194		
$LnSize_{i,t}$		−4.068		0.044		0.044		−0.166*
$LnCapital_{i,t}$		−10.890		1.462*		0.462**		0.612*
$LnROA_{i,t}$								−0.033
$LnNPL_{i,t}$								−0.126*
Effects	Random	Random	Random	Random	Random	Random	Fixed	Fixed

***, **, *Significance at a 1%, 5%, and 10% level of significance

Models (7) and (8) suggest that $COVID\text{-}19_t$ had a positive effect on $LnLiquidity_{i,t}$, that is, the loan to asset ratio. Given that an increase in the loan to asset ratio implies a decrease in the bank's liquidity (Al-Harbi, 2017), this finding suggests that the COVID-19 pandemic had a significant, negative effect on the liquidity of South African banks. Therefore, the third key finding of this study is that the COVID-19 pandemic had a negative effect on the liquidity of South African banks. The third finding of this study coincides with the results of Rahman et al. (2021) and Magwedere and Marozva (2022). According to Rahman et al. (2021), the negative effect of COVID-19 on bank liquidity may be a result of a deterioration in the quality of banks' assets as well as increasing liquidity demands by customers. However, the effect of COVID-19 on the liquidity of South African banks is marginal. In particular, South African banks experienced a 0.06% decrease in liquidity relative to the period before the crisis. This effect may have been reduced by the initiatives taken by the South African Reserve Bank to create additional liquidity for the banking sector (SARB, 2020).

For completion, Model (8) also shows that $LnLiquidity_{i,t}$ is positively influenced by $LnCapital_{i,t}$ but negatively influence by $LnSize_{i,t}$ and $LnNPL_{i,t}$. This implies that bank liquidity is negatively influenced by capital but positively influenced by size and the non-performing loans ratio. Delechat et al. (2012) and Al-Harbi (2017) also report that capital has a negative effect on liquidity. According to Delechat et al. (2012), this finding is counterintuitive because banks with more capital are expected to hold more liquidity buffers. Nevertheless, the negative effect may be because increase capital enhances the bank's ability to provide liquidity, thus, reducing the bank's liquidity (Al-Harbi, 2017). Similar to the results of this study, Al-Harbi (2017) also reported a positive relationship between size and liquidity. Finally, the positive relationship between liquidity and non-performing loans coincides with the findings of Ghosh (2016) who asserts that banks with greater liquidity compromise the quality of their loan portfolio and, as a result, are exposed to greater credit risk.

5. CONCLUSION

The objective of this study was to explore the effect of the COVID-19 pandemic on the South African banking sector, with particular reference to returns, profitability, and liquidity. To achieve this objective, the study reviewed six banks listed on the JSE from 2010 to 2022. Three key empirical findings were reported in this study: firstly, COVID-19 did not have an effect on excess bank stock returns; secondly, COVID-19 has a negative effect on bank profitability; and thirdly, COVID-19 had a negative effect on bank liquidity. These findings have significant implications for various stakeholders. Given that banking sector performance and liquidity is of great importance to national and global financial systems, it is essential for governments and regulators to devise policies which assists in reducing the adverse effects of COVID-19 on bank profitability and liquidity. These measures may include direct market involvement, fiscal stimulus packages, and quantitative testing (Elnahass et al., 2021).

These findings also motivate for the organisation of banking unions across regions in order to promote financial stability and reduce the impact of future crises (Elnahass et al., 2021). For the management of banks, these findings suggest that banks need to identify measures to reduce the detrimental effects of crises on their profitability and liquidity. These measures may include proper monitoring of financial risks, cash flow forecasting, and corporate efficiency (Karim et al., 2021). Finally, these findings suggest that investments in bank stock have diversification benefits since their returns were not influenced by the COVID-19 pandemic.

Future research could explore the effect of the COVID-19 pandemic on other important characteristics of banks, for instance, asset quality, capital adequacy, and funding cost. A cross-country analysis would also assist in identifying differential effects of the COVID-19 pandemic. It would also be worthwhile to explore the effects of COVID-19 on the returns, profitability, and liquidity of other sectors in South Africa.

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